Seed quality and carbon primary metabolism

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Résumé en anglais	Improving seed quality is amongst the most important challenges of contemporary agriculture. In fact, using plant varieties with better germination rates that are more tolerant to stress during seedling establishment may improve crop yield considerably. Therefore, intense efforts are currently being devoted to improve seed quality in many species, mostly using genomics tools. However, despite its considerable importance during seed imbibition and germination processes, primary carbon metabolism in seeds is less studied. Our knowledge of the physiology of seed respiration and energy generation and the impact of these processes on seed performance have made limited progress over the past three decades. In particular, (isotope-assisted) metabolomics of seeds has only been assessed occasionally, and there is limited information on possible quantitative relationships between metabolic fluxes and seed quality. Here, we review the recent literature and provide an overview of potential links between metabolic efficiency, metabolic biomarkers, and seed quality and discuss implications for future research, including a climate change context.
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